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SOUTH AFRICA AS A HEALTH RESORT.

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(WITH THE DISCUSSION.)

SIR HENRY BARKLY, G.C.M.G., K.C.B., IN THE CHAIR.

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SOUTH AFRICA AS A HEALTH RESORT.

When the request was made to me that I should read a paper on the climate of South Africa, before the Fellows of the Royal Colonial Institute, at the opening meeting of a new session, I could not but feel gratified by the honour conferred upon me.

I am fully aware that some of my hearers may have spent half a lifetime in Africa; but it is one thing to live in a vast country, and another to collect particulars as to its climate and capabilities from the standpoint of a physician anxious to search into every region of earth and sea which may suit his purpose of giving or restoring health.

Fifteen years ago, when I published my first contribution on the subject,* I was able to record, as the basis of my work, the details of some twenty cases of disease, treated for the most part in Natal and the Orange Free State.

Experience since gained, supplemented as it has been by information acquired during a recent visit, is my justification for venturing to address you on the subject.

On comparing the Southern with the Northern Hemisphere, the first point to which our attention is called is this, that Sydney, Melbourne, Adelaide, and Cape Town, only distant about 34° from the equator, have a corresponding mean annual temperature—namely, about 63°—with Naples, Nice, and the Riviera in from 41° to 43° north.

At this latitude in the Northern Hemisphere we are accustomed to regard an elevation of from 5000, to 6,000 feet as necessary to secure immunity from consumption. But the elevation above the sea at which such immunity is secured in South Africa is remarkably low.

* "On the Elevated Health Resorts of the Southern Hemisphere, with special reference to South Africa;" Transactions of Royal Medical and Chirurgical Society, vol. lvi., 1873.

In the district of the "Karoo" we find a region characterised by excessive dryness of air and soil, where, at a level of less than 3,000 feet above the sea, remarkable purity and coolness of air are secured, with an almost complete absence of floating matter; together with great intensity of light and solar influence; great stillness in winter; a large amount of ozone, and a degree of rarefaction of proved value in cases of phthisis.

In winter these conditions prevail in greater or less perfection in various places; in summer, however, the heat is apt to prove excessive, the winds hot and dust-laden, and it becomes difficult to take the amount of out-door exercise necessary for recovery.

A physician who is brought into daily contact with those who are seeking relief from climate treatment, is accustomed to arrange his patients into various classes.

First, those who require "change of air" to complete their convalescence from acute illness.

Second, those who need to be sheltered from the vicissitudes of our English winter.

And third, those for whom health can alone be anticipated if they are content to be separated for years, or perhaps for life, from the conditions under which their disease originated.

Our European health resorts supply us with varied means by which we may successfully meet the requirements of the first and second group; but our Colonies must be searched to supply what is wanted for the third.

As regards the first, however, a sea voyage with a short sojourn in a sunnier clime may accomplish more completely what is often sought in a too hurried rush across Europe.

As to the second, shelter from the dangers of a northern winter may be sought and found in the Southern Hemisphere as readily as in the South of Europe, and with less risk of renewed illness during early spring.

The public mind is slowly awakening to the knowledge that the British Empire has climates adapted for every form of constitutional defect. Those in this room may do much to emphasise and to impress the fact that health and life may be secured and maintained at a higher level, and for a longer time, if we select with care and forethought the home for which we are fitted.

It is not enough to decide what occupation or profession should be chosen for our youth, we must also determine in which part of the Empire it may best be carried out. We must look at life from

a larger and broader platform, and regard our Colonies with gratitude, as affording health stations for our children and breathing space for our teeming home population.

At home, trained talent and strong health are alike essential. But there are many whose strength and vitality are not sufficient for success in the high competition of this country. These, if transplanted to a Colony where life is more restful, and competition less keen, would rise to eminence.

It may be true that the Colonies, like the Mother Country, are overstocked; but men of exceptional ability will push their way in every community, and South Africa can boast of many in positions of high trust who could never have attained such eminence in a trying climate.

The present moment does not appear a very favourable one for settling in South Africa, but who shall say that it may not quickly change its phase, and those who arrive soon may have the credit of being the pioneers of a new and important development in a country the capacities and capabilities of which are unquestioned.

It would be out of place and inappropriate were I to venture here on any detailed description of the cases suited for the climates of South Africa. This could alone be attempted before a medical audience, and it was only yesterday I read a paper on the subject before the Medical Society of London.

In deciding where to send our patients, we need to be not doctors only, but students of character as well. We must not forget that the power of adaptation to new conditions is needful for the health-seeker in a new country.

It is useless to send to South Africa a man or woman whose comfort depends on the luxurious surroundings of home life, and who will never cease to grumble when difficulties arise. We must not expect success if we send to our Colonies those who have always drifted and have never exercised volition, have always been moulded by circumstances, and have never learned to overcome. The dyspeptic who cannot digest hard, dry, or greasy meat will be in perpetual difficulties, and we must not expect those whose main occupation at home is to criticise their food, to change their habit when there is ample scope for its exercise. What is really more important than the nature or stage of disease is the character of the patient, and his readiness to adapt himself to the new conditions of life. He should be a man of resource, able to interest himself in the life of his neighbours. Those so often met with in South Africa, who have regained

health there, are, for the most part, men having this aptitude, ready to accept any post, and to undertake any work which may offer in the new country.

I would now say a few words in favour of a short pleasure trip to the Cape, not for invalids only, but for those seeking a new playground wherein to spend a summer holiday.

There are very many people who, tired of the London season, disinclined for the bustle of a scamper to the Swiss mountains or Scotch moors, may well seek pastures new. For such I would suggest a trip such as I have lately taken. Leaving the East India Docks at the end of July, after three weeks of perfect rest in a mail steamer having all the regularity and dependency of an express train on a well-appointed line, you find yourself refreshed and renewed by a time of quiescence unattainable on land.

A vast change has indeed come over the habits of men as regards holidays. In the time of John Gilpin, we have it on the authority of the devoted spouse herself, that they

> "For twice ten tedious years
> No holiday had seen."

The Pavilion at Brighton gives local expression to the idea—quite a novelty in the eighteenth century—that a seaside haven of rest was suited to a Prince Regent.

But this century has marked an amazing development; the recognition of the necessity for a summer holiday has spread from prince to peasant, and even the poorest of the East-enders count upon an outing in the hop-picking season.

The development of the railway system has brought within reach places inaccessible before, and the application of steam to ocean transit has done much in bringing near lands previously beyond our ken.

Our schemes of benevolence enable those who add the sorrow of sickness to that of poverty, to gain the benefit of the seaside or the country. My own hospital at Brompton has lately adopted a systematic plan of drafting off such patients as may need it to convalescent homes on the South Coast; and I have helped to establish a scheme by which the health-restoring luxury of a winter in the Engadine may be brought within the reach of those who cannot afford to pay for it.

Our American, African, and Australasian Colonies hold out attractions to those needing a holiday which cannot be surpassed. All members of the Royal Colonial Institute will support me in the opinion that if the idea of our responsibilities as citizens of

the Greater Britain has any reality, we should endeavour from time to time to make the money we annually spend on the luxuries of foreign travel, of benefit to those of our own Empire.

Medical men, and especially those whose work takes them in the direction of "climate treatment," may do much to promote this truly national aim, if, before commending a patient to a foreign health resort, they think first, "Is there any haven of our own of equal value?"

I have recently published a paper on water treatment, pointing out that the baths of England have equal virtue with those of many continental spas; and it might be readily shown that England and her Colonies possess all, or nearly all, that can be needed by the health-seeker.

I am no "specialist" who thinks of nothing but chest disease. Every day brings me in contact with those who have "run down" from overwork, under rest, or faulty adaptation of the human machine to its environment.

A sea voyage is well suited for those who are unequal to active exertion, and to the bustle of a crowded lodging in the country, or at the sea side, where a bevy of children or relations are always *en évidence*, and preventing rest.

We are too prone to think that people with "nervous disorders" are not really ill, and to despise their ailments; and truly the physic they require is not an "alterative" to be purchased at the chemist's, but a change of scene and surrounding such as can best be found at sea. The melancholy patient is sure to find on board a mixed party of fellow travellers, with bright animal spirits and exuberant vitality. The fact that he cannot shut himself in his room away from society keeps him from *ennui*. He will soon be drawn out of himself, and on arrival in South Africa, or when he reaches home, his friends will hardly recognise him as the same. The short stay at the Cape will have added to the value of the change and consolidated the benefit, and two months thus spent will do far more than could have been accomplished in the same time on the shores of England, or even among the Norwegian Fiords.

Remember, there are some to whom new life comes with active exercise on the moors or among the peaks, passes, and glaciers; and others who need rest and quiescence, and for whom the sea voyage or lying on the beach throwing pebbles into the sea is the desideratum. Those who need the first and choose the second, return from their holiday more oppressed than ever; and those who need

rest and take violent exertion, return with a strained heart or over-distended lung. Change of work is good for some, cessation for others.

I cannot speak too highly of the comforts, conveniences, and courtesy experienced on board the "Castle" steamers; and I hear that those of the "Union" Company are equally satisfactory.

On arriving at Cape Town, the splendid Table Mountain rises in front of us, with the town spread out at its base.

Not lingering, in the first instance, more than two days at Cape Town, during which I had time to make the acquaintance of a few of the principal inhabitants, I went on in the same steamer round the Cape to Mossel Bay, past the Knysna to Port Elizabeth. The proverbial roughness of the sea at the Cape of Good Hope, of which I had full experience, makes it desirable to go on in the larger boats rather than in the small mail steamers which ply along the coast.

The Knysna district is perhaps the most beautiful part of South Africa. Its mountains and valleys, covered with varied vegetation, and peopled with large and small game, afford great attraction to the sportsman. Although the rainfall is greater than in the neighbouring parts, it is not excessive. The coast lands partake of the rather unhealthy character prevailing all round South Africa, but at an elevation of a few hundred feet and at a distance of twenty or fifty miles from the shore, these evil influences are lessened.

A plan is in contemplation for the development of this part of the Colony, and it is proposed to build a hotel and provide greater attractions for visitors than exist at present. The beautiful land-locked harbour is open to small mail steamers, and the large vessels call at Mossel Bay, not many miles off.

Port Elizabeth lies in a deep bay, sheltered from all except S.E. winds, which, unfortunately, are at times severe and destructive, as was the case two months ago, when nine vessels were blown ashore. Thanks in a great measure to the energy of the Mayor, it has many evidences of prosperity, and has been called the "Liverpool of South Africa." Water has been laid on from a distance of thirty miles, there is a magnificent sea-wall and promenade, and the greater number of European inhabitants make it more enlightened, more cleanly, and better paved than the other towns of South Africa. Not a tree will grow till the top of the hill is reached, where, protected from the sea breezes, vegetation is luxuriant around the villa residences of the wealthier

inhabitants. In summer the climate is cool, and exposed iron rusts, as it does not in the interior.

From October to March the prevailing winds are S.E., blowing right into Algoa Bay, laden with saline moisture and accompanied by high solar heat, thus producing a "local climate" incompatible with the health and comfort of an invalid with bronchial or lung mischief. From April to August N.W. winds prevail, and the sense of oppression in breathing is relieved.

East London has a similar climate; landing is no longer a difficulty, and hence Queen's Town, King William's Town, Cathcart, and Aliwal may be readily reached by railway. It is resorted to in summer by the King William's Town residents.

The temperature of the coast on the south and east is influenced by the Mozambique current, the effect of which is to make all the coast to the eastward of Simon's Bay warmer than that of Cape Town, just as the Equatorial current that impinges on the east coast of Australia helps to make Sydney warmer than Adelaide.

Graham's Town (1,800 ft.) is beautifully situated, within thirty miles of the sea, although more than one hundred miles distant from Port Elizabeth, from which it is reached by railway. The rainfall is fairly and equally distributed throughout the year, and is not limited, as in so many other places in Africa, to a few thunderstorms in summer. The temperature is remarkably equable.

It is sheltered from the strong winds which render Port Elizabeth undesirable for invalids, and has a delightful climate both in summer and winter. With the exception of the suburbs of Cape Town, it is unquestionably the most pleasant place to live at in the Colony. During my stay there, at the end of winter, the nights were cold—mean 42° F.—but during the day the shade temperature rose to 75°. The atmosphere is distinctly less dry than that of Bloemfontein; the rainfall is distributed throughout the year (see diagram), and excessive dryness is less complained of at Graham's Town than in many other parts.

Graham's Town has been described as the "Winchester" of South Africa. Its ecclesiastical and educational advantages are great; the intellectual and social activities of the place are much like those of an English cathedral town, and any person of culture would find in its public buildings, gardens, and surroundings much to interest and divert. It is situated in the most productive plateau of the Colony, close to the watershed of

three river systems; its genial climate, fruitful soil, cheap living, and easy access by rail to the coast, to the bracing mountain air, or to the dry inland plains, make it a desirable sojourning-place for the invalid.

The air is bright and exhilarating. The mean annual temperature is 60°; in summer 63°, and winter 53°; mean range, 15° (17·7° in summer, and 12·8° in winter); an annual rainfall of 22 in., distributed over about 84 days. The rainfall occurs chiefly in summer, and so keeps down the temperature, and secures remarkable equability.

The Eastern Province, of which Graham's Town was formerly the capital, may be thus divided: (1) The coast plateau, warm, genial, and equable; (2) a midland terrace, from 1,000 to 2,500 ft. elevation, cooler, drier, and more genial; (3) a mountain climate from 2,500 to 5,000 ft., still drier and more bracing, with greater extremes; hot days, cold nights; the range of temperature being double that of the coast-lands. Cradock and Aliwal North may illustrate the high plateau, Graham's Town and King William's Town the intermediate one, and Port Elizabeth and the Cowie the coast.

King William's Town (1,273 ft.) is decidedly hotter than Graham's Town, but otherwise the climate is similar; the social interests are less; and the elevation, geographical and ecclesiastical, is less also.

Port Alfred, at the mouth of the Cowie River, 44 miles by railway (now disused) from Graham's Town, is a pleasant place of sea-side sojourn during June and July, but it is unsuited for cases of phthisis.

Graaff-Reinet (elevation 2,463 feet) is an exceptionally hot place in summer, but may be recommended in winter, as being accessible by railway, and having a competent medical man.

The climate of Queen's Town (3,500 ft. elevation) on the line between East London and Aliwal North, is thus described:—"The mean temperature of the four hottest months (November to February) is 69°; of the four coldest (May to August), 52°. The night temperature is seldom high; 10° of frost may be looked for on two or three mornings every winter. The frosty mornings are followed by glorious days. Only on quiet and cloudless nights does dew fall, and the peace and clearness abide, while the brilliant but no longer scorching sun does his daily journey. The rainfall during the five months from May to September is only three inches. Heavy thunderstorm rains fall in summer,

leaving the sky serene, followed by calm nights. This is an admirable place for consumptive cases."

Aliwal North (4,348 ft.) the northern terminus of the Eastern Railway, is 280 miles distant, and may be reached in 24 hours from East London; or the Eastern Railway may be reached from Graham's Town or Cradock in a day's drive. It has two fairly comfortable hotels. Houses are to be had, and rents are low. It is a large village on the Orange River, which runs rapidly after rain, and is never dry; for nine months in the year it is but a stream running in a deep bed. The air is dry and cool, like that of Cradock, but the extra elevation makes it more bracing. A patient, whose disease was arrested at Graham's Town, has been able to carry on his work assiduously and without break since living at Aliwal. In October last he wrote:—"The winter has been splendid: at night sharp frosts, the days bright, dry, and crisp. The spring rains come down in two or three days, the weather has been perfectly dry since." The Doctor observes that dark-complexioned people do badly, but that the climate of Aliwal suits blondes!

Aliwal is beyond doubt one of the most valuable health resorts of South Africa for phthisical patients. Until the railway is completed which is to connect the East and West provinces, the greater accessibility of Cradock is likely to make it more popular. Aliwal, however, as being on the line of railway from East London, is more easily reached than Bloemfontein, which is likely to remain for years beyond the reach of the "iron horse." The Boers of the Orange Free State or of the Transvaal prefer to make money by transport, and are slow to allow the access of the rail.

Tarkastad (4,280 ft.) midway between Cradock and Queen's Town, is superior to many other health stations, inasmuch as it is not shut in by hills, and has constant breezes to cool the air. It is in the midst of a fertile region, surrounded by large farms mainly occupied by Englishmen; the Golden Valley Farm being among the most beautiful in the Colony. It has, moreover, an exceedingly comfortable hotel, Passmore's, managed by an English lady. There are two capable medical men, and it is much resorted to by invalids who find Cradock, Queen's Town, or King William's Town too hot. There is no time in the year in which it is unpleasant: the summer thunderstorms freshen the air when tending to sultriness. The baths in the hotel are well arranged, and very refreshing after a day's shooting or a long drive. Tarkastad is reached by a five hours' drive from Cradock (180 miles by rail from Port Elizabeth), over beautiful country,

which on leaving Cradock becomes more grassy, the karoo bush being superseded by a richer vegetation; yet the air and soil are so dry that a knife left on the veldt for a year or two does not become rusty. If approached from East London the distance to Queen's Town is 154 miles, whence it is a five hours' drive to Tarkastad. The fact that it is off the line of railway makes it superior to more accessible places, where the temptation is great to be flitting constantly from place to place, and thus losing the benefit which in chronic cases can alone be secured by patient continuance for many months in health-giving air.

Dordrecht (5,200 ft.) nearly 1,000 ft. higher, may be resorted to for a few weeks in midsummer, but it is less attractive than Tarkastad, and patients do not so willingly remain there long enough to gain permanent benefit.

Burghersdorp (4,650 ft.), the chief town of the eastern division of the Karoo, has been recommended by Dr. Kannemeyer specially on the ground that it is within easy access of places 1,000 ft. higher, and 1,000 ft. lower elevation, thus affording the opportunity of readily changing the climate at different times of year. To quote Dr. Kannemeyer's description of the climate of Burghersdorp, "The summer months are hot and relaxing during the day; the midwinter nights are cold. During the rest of the year the weather is temperate and delightful; the sun is rarely obscured, never for a whole day, mostly and gratefully by thunderclouds during the hot summer afternoons. We live practically under a cloudless sky. Our principal rainfall is in summer, sharp, short, and refreshing thunderstorms. The range of temperature in summer is high on the plains. In the Stormbergen Mountains it is more equable, the heat never oppressive during the day, nor are the nights cold; and there is more verdure and humidity. In winter the days are cloudless, rainless, sunny, and very dry on the plains. Between sunset and sunrise the air is very cold and frosty. Snow is rare. The mountainous parts are cold and comparatively damp, frosts heavy, and snow occasionally. Mists or fogs are unknown on the plains; in the mountains they occur frequently."

Phthisical cases do better at Burghersdorp than at Bloemfontein.

Before returning to Cape Town, a few words must be said of Cradock and Beaufort West, Fraserburg, Hanover, and Ceres.

Cradock (2,850 ft.) is accessible by rail (180 miles) from Port Elizabeth, and is regarded in the Colony as one of its principal health resorts. Although apt to be dusty during droughts, it has

a good all-year-round climate. It is more accessible than Aliwal or Bloemfontein. Its rainfall is small, occurring only in the form of summer thunderstorms. The humidity is 62 per cent.; the average summer maximum temperature is 91 degrees. Although the days are hot the evenings are cold. The dryness of the atmosphere makes it easy to bear the heat. Asthma is unknown there.

The elevation of Beaufort West (readily reached from Cape Town or Port Elizabeth) is the same as that of Cradock. It is halfway between Cape Town and Kimberley. Trees grow along the streets, and the appearance of the town is more attractive than that of Cradock; but those compelled to stay there for months are apt to mope in either. It is, however, a very good stopping place on the way north.

Hanover, 9 miles from Hanover-road Station, 300 miles from Port Elizabeth, and 539 miles from Cape Town; elevation 4,600 ft.; is dry and bracing; the winter climate is compared to that of the South of France; the summer is hot, evenings cool; rainfall 10 in. The scenery is described as pretty, but it partakes of the arid karoo character. Cases of phthisis and bronchitis in the young and middle-aged do well. Pneumonia, however, is common.

The district around Hanover is available for those preparing to lead an agricultural life, or for sheep farming.

Fraserburg, 360 miles from Cape Town (4,500 ft. elevation), is barren. "Periodical rains" relieve monotony. The winds are strong; the air dusty. Both summer and winter are severe—summer 100 to 110 degrees in the shade; winter, 24 degrees. Rainfall 2 to 4 inches. Railway station 10 miles off.

Ceres (1,700 ft.), 10 miles from Ceres-road Station, which is 85 miles from Cape Town, occupies a beautiful position, and is a very suitable place in which to spend a few weeks before deciding on a more settled home. In elevation it is similar to Graham's Town, but the climate is much more humid, especially in winter. Ceres possesses the great advantage of a comfortably-arranged sanatorium, or hospital, available for invalids, under the highly competent supervision of Dr. Kahn. The streets are well laid out with boulevards of oak trees. A river runs through the town, with well-protected bathing-places. The soil is sandy; the air is dry in summer. Ceres is sheltered by mountains from the S.E. winds, which often render Cape Town and its vicinity trying. An

elevated plateau, 2,700 ft. high, is reached in a two hours' drive, having a beautifully cool, dry summer climate, but from May to August strong N. and N.W. winds prevail, and thunder-storms are frequent. The highest recorded temperature was only 84°, and the lowest night temperature 50°.

It was my hope when visiting South Africa, that I might be able to hold it out as a country in which many Englishmen with damaged tissues or hereditary taint might hope to settle, with a prospect of health and affluence. So far as climate is concerned, I am not disappointed ; I regret, however, to have to confess that in the present state of financial depression, when men and money have poured into the Transvaal, this is not the case. As regards the highest class of patients, whom we see in town and country living with every comfort and luxury, we could not venture to send them to a country where the hotel accommodation is so deficient.

The hotels in South Africa are, for the most part, unsatisfactory. The attendance is bad, and the conveniences few. The number of patients going to South Africa is comparatively small, and quite inadequate to fill the various competing health resorts. It would be well if the patients could be all concentrated in one or two, and an enterprising hotel manager willing to lay out capital, in order to provide the necessary comforts, could be found.

At Graham's Town and King William's Town (called "King") the comforts and luxuries of life are as fully attainable as in any other part of the Colony, except the suburbs of Cape Town (which are too humid in winter), or in Kimberley.

As regards the class of clerks, warehousemen, journeymen tailors, &c., it is difficult to promise employment. As to professional men, whether architects, engineers, lawyers, doctors, or clergymen, there is always scope everywhere for really able men. Those who have held their own in the midst of the competition of the old country, are sure to make a position for themselves in a community where the number of really eminent men is necessarily limited.

Open air occupations are at present few, but as the unhealthy mania for gambling in gold and diamond shares which is the curse of South Africa is replaced by patient plodding work on the land, the country will speedily change its aspect. A friend and patient of mine, Mr. Irvine of King William's Town, showed what care and wise outlay could do in converting a desert into a model farm full of flourishing fields, plantations, gardens, and thus setting

an example which might be advantageously followed throughout a great extent of barren country.

Such efforts as these increase the value of South Africa as a health resort by reducing the excessive dryness of the air and soil, and by giving something for the eye gratefully to rest upon, and thus rendering those contented who without anything of beauty to look at would soon escape to more attractive lands.

Cape Town, notwithstanding the fact that it is the capital, the seat of government, and the largest town in South Africa, is from a sanitary point of view in a truly disgraceful condition. The European population has deserted the town in favour of the suburbs. The Governor and the General, who are obliged to be in residence for part of the year, escape to Wynberg whenever it is possible. The efforts at drainage hitherto made have turned the Bay into a sewage outfall, the Breakwater having prevented the "scour" of the tide, the matters brought down by the drains undergo decomposition, poison the air, and develop endemic disease. Until this state of things is remedied it is our duty to see that invalids are not tempted to remain in the city.

When at Cape Town an opportunity was kindly afforded me of meeting the members of the "South African Medical Association" to discuss questions connected with the climate,

More than twenty members of the society were present, representing various parts of the Colony, and in the discussion that ensued, very interesting statements were made and important generalizations arrived at.

A series of papers (33 in number) were placed in my hands, prepared by the medical men of the various districts of the Colony, containing a mass of information from which I was allowed to make extracts. These papers were drawn up in answer to a series of carefully prepared inquiries with a view to obtain definite information on climate, elevation, water supply, &c., together with references to cases of disease treated in the several districts.

Time and space make it impossible to do full justice to these communications here, but I have endeavoured to classify them according to the different areas, some of which are of great elevation, some low-lying, some humid, and others exceedingly dry. I have already described, in as few words as possible, some of the typical places mentioned in these reports, and will now pass to a comparative survey.

Dryness and clearness are the chief characteristics of the

air, due to the fact that rain falls at long intervals, and the greater part of the country is glazed with baked clay, from which the water runs off as fast as it falls; there is nothing to retain the moisture or allow it slowly to filter into the earth; this, though bad for agriculture, is good for those for whom a dry, rarefied air is essential.

A glance at the diagrams will show that the rainy season occurs in winter in the West, and in summer in the Eastern Province; so that the wet season may be easily avoided by travelling from one part of the Colony to another.

The three winter months are exceedingly trying in the high, exposed parts, for the houses are built without fireplaces, and coal and wood for fuel are almost unobtainable; dried cowdung doing duty for peat, as well as for cement for flooring, and stucco for the walls.

The mean temperature of the Cape Colony is 63°, about the same as that of the Riviera, of Sydney, Melbourne, and Adelaide.

On the coast lands the mean summer heat is 68°, and in winter 56°.

That the climate is favourable to the growth and development of "genus homo" is shown by the fact that the descendants of the early Dutch settlers who have been in the Colony for 200 years are amongst the largest aud most robust of men. It is not unusual to see men from 6 ft. 4 in. to 6 ft. 6 in., not lanky, weedy, or ill-grown, but with bone and muscle more than proportionate to their height.

Army statistics show that the Cape and Australia are the most salubrious stations in which the British Army has been stationed. Before the Suez Canal was opened, the Cape was recognised, and justly, as being the sanatorium for broken-down Indians.

The climate of the coast lands—that, for instance, of the suburbs of Cape Town—has been compared to that of Madeira. At Wynberg, Rondebosch, and Kalk Bay the air is clear, bright, and sunny in summer, but in winter overcharged with moisture. It proves enervating to residents, who in a few years are apt to lose physical and intellectual energy. The heat, too, is great in summer.

At Kimberley the mean temperature is 70° in summer and 50° in winter, whilst in London it is 64° and 37°.

The winter is short and mild; the heat of midsummer is more intense than that of July and August in England, but so dry, rarefied, and buoyant is the atmosphere, that the men work all

day with ceaseless energy and activity notwithstanding the high temperature, which in December, January, and February rises frequently to 104° or 105°.

Much consideration is needed for the selection of the district suited for each case, and it may be wise to obtain advice, after arriving in the Colony, as to the best places at which to stay at different times of the year. Happily, there are highly competent men at Cape Town and in the Eastern Province ready to give the needful counsel. Some general principles, however, should be recognised before leaving home if our patients are to gain the fullest benefit, although each individual case requires, of course, special consideration and guidance.

The Eastern Province supplies to non-tubercular cases very many advantages, especially in Graham's Town and King William's Town.

The Karoo district, in which Aliwal, Beaufort West, Colesberg, Cradock, &c., are situated, may be reached from Cape Town or Port Elizabeth in a few hours, and will prove a haven to an ever-increasing number of health-seekers, whilst the Upper Karoo and more elevated plateaux of the interior give scope for the energies of those who, having regained health in the Karoo, desire to secure wealth in the gold fields or diamond mines of the Transvaal or Kimberley.

This extensive district, which occupies some 18.000 square miles, owes its name to the presence of the karoo bush, which dots the whole area and affords food for millions of sheep, who find in its young shoots a highly fattening food.

Spring and autumn hardly exist in the upper Karoo plateau. Summer begins suddenly about September, increases in intensity till January, decreases till the end of April. Dry, warm winds, sometimes dust-laden, prevail during the day, with cool, invigorating breezes at night. Thunderstorms are common in midsummer (Christmas time), accompanied by rain or hail. These summer thunderstorms infuse new life into every living thing; before these refreshing storms occur, the heat is often oppressive, and the thermometer ranges as high as 110° F. in the shade; but owing to the dryness of the atmosphere, the gentle currents of air, and the cool evenings, it is not very oppressive. In winter the air is dry, clear, sharp, and delightful, but very cold, often frosty, at night.

The inaccessibility of this region has made it less known than it deserves to be. Now that the Diamond Fields have

opened up the country, comfortably appointed express trains on the American system, having sleeping cars and dining cars, and every convenience, rapidly convey the traveller to places where he can spend the summer and winter months respectively under conditions calculated to secure benefit with the least possible risk. The towns and villages of the Karoo become tree-clad and attractive if the water supply is adequate for irrigation; without this they have a dry, desolate aspect.

The great heat of the sun in the shadeless regions of the Cape Colony can be borne without injury; the air being pure, dry, and generally in motion, sunstroke never occurs. A lower shade temperature where the movement of the air is less, and evaporation, with its cooling tendency, is checked, cannot be so easily borne. A shade heat of 90° F. is overpowering to those who can sustain prolonged hard work in a sun heat of 120°.

The general conclusion to which the evidence points is that for phthisical cases the Karoo climate supplies all the desiderata, but that the comforts and conveniences of home are here still deficient, and that even where they are to be found there is a want of that incident and variety so important in every case.

Those to whom the delicacies of home life are essential may find the monotony trying, and the coarse conditions of life intolerably irksome. A continuous residence is needed for cure in chronic cases, and no one should attempt such a life who is not content to put up with many inconveniences, and to renounce most of the refinements and avocations of English town life. To many persons, however, the free and easy mode of existence becomes so pleasant that a return to city life is viewed with regret. There is variety for sportsmen, and those who enjoy riding and hunting the four kinds of buck found in the district.

Experience shows that tubercular phthisis is almost unknown in many parts of the Karoo.

Strong and healthy people notice a diminution of appetite and activity at an equable high temperature; whereas weak persons live and flourish in warmth and sunshine, and manifest greater energy of mind and body, and less liability to disease than in cooler and more variable regions suited to the strong and healthy. Conversely, cold climates are well borne by the sturdy, though trying and perhaps destructive to the delicate or ailing.

If the invalid determines to spend the summer in the lower Karoo, or, indeed, in the central or higher Karoo, he must be content to pass the day under the verandah of the house, or in a

hammock slung under the trees. The houses are kept cool by closing doors and windows in the early morning; such a close, fusty air is of course quite unsuited to those with chest disease.

As might be expected, the general consensus of opinion points to the conclusion that continuous residence for a series of years is necessary to establish cure in cases of extensive or advanced disease, but that in incipient cases and those of threatened disease a short residence often secures speedy improvement. But suitable hotel accommodation must be provided.

During thirty years of practice I have had ample means of judging the results of climate treatment in New South Wales, Victoria, New Zealand, and Canada. I have found these Colonies prove of essential service to many. I feel satisfied, however, that South Africa, from its accessibility, its dryness, elevation, and other peculiarities, is specially adapted to others. At present it is better fitted for those who are prepared to be pioneers.

It must be remembered in making a comparison between the Australian and South African climates that, whilst the latitude of Sydney corresponds with that of Port Elizabeth and Cape Town, there is no part of South Africa in so low a latitude as Melbourne or even Adelaide.

The mean temperature of Cape Town is 61·3° F., of Melbourne 57·2°, the same as Bathurst, which is 2,150 ft. above the sea; Washington is 56·9°, Bordeaux 57·0°, Marseilles 58·3°; Sydney 62·5°, Adelaide 64·6°, and Perth (W. Australia) 64°

Whereas the rainfall of Cape Town is 25 inches, that of Sydney is 50 inches, of Perth 28·9, of Melbourne 25·46, Ventnor 25·5, London 24, Paris 22, and Adelaide 20.

The elevation of Cradock and of Beaufort West is only 2,800 ft., yet this has proved sufficient in many cases of phthisis. It is difficult to understand that this should be the case without personal experience of the remarkably dry, clear, and healing atmosphere.

In cases of contracted lung after pleuro-pneumonia, collapse after whooping cough, or in cases in which the expanding effect of rarefied air is required, a higher altitude, like that of Aliwal, Tarkastad, or Johannesberg is requisite.

Experience is required also to determine in each case whether (*a*) it is best to accustom the patient to the dry air of the Karoo at a moderate elevation before making trial of the higher altitudes, or (*b*) whether the higher elevation should be first sought,

and then a settled home be found at a moderate elevation, *e.g.*, 1,700 ft. above the sea.

I have known good results follow from a sojourn in the Eastern Province of the Cape Colony during the winter, and then, taking ship for Sydney, settle in the Riverina between the Murray and Murrumbidgee Rivers at an elevation of some 1,200 or 1,500 ft.

In a communication of this kind it is not possible even to indicate the conditions which guide the physician in formulating a plan for a given case. For instance, I have to-day advised a patient to seek first, the humid atmosphere of the tropics; second, an exceedingly dry and elevated climate; and third, a life-long sojourn in a variable climate, like that of New Zealand; for a very long sea voyage would certainly have been harmful, and a long stay in the Karoo will probably not be required.

This is not the occasion for details as regards rainfall, thermometric observations, wet and dry bulb readings, force, prevalence, and direction of winds, &c. These facts are recorded in the annual reports of the Meteorological Commission. I have prepared from these reports the diagrams on the wall, which illustrate the monthly rainfall in certain selected health resorts in the east and west provinces of Cape Colony, and I also exhibit a table giving the annual rainfall in inches and the number of days on which rain fell—for the value of the first without the second is greatly lessened. From these it will be seen how much places near together vary in this respect, though no diversity is so marked as that in the immediate vicinity of Cape Town, where it will be seen that the rainfall at Cape Town Castle is 21·74, at Wynberg 43·40 (ten miles off), and at Bishop's Court 56·65. The last is situated half-way between the other two, but the position of Table Mountain determines the rainfall in either case.

Some of the diagrams exhibited have been kindly lent for the occasion by my kind friend Sir Charles Mills, the Agent-General of Cape Colony, to whom our best thanks are due.

The series of framed drawings, thirteen in number, show the rainfall for each month in the year, and for the whole year; from which it will be clearly seen that the winter rainfall about Cape Town is high, whilst in the Eastern Province the winter is dry, the rainfall occuring only in the summer months.

The large coloured diagrams show exactly the distribution of rain month by month at Cape Town, Wynberg, and Ceres, with the almost rainless Pella in the N.W.

Compare those in which the winter rains are heavy, with the

diagrams of the Eastern Province, which clearly exhibit the fact that at Aliwal and Colesberg the rainfall in winter is almost nil, whereas in summer it is considerable.

At Graham's Town and Port Elizabeth it will be observed that the rain is fairly distributed throughout the year. This may seem to be a disadvantage, and really is so, in those cases of lung disease in which an absolutely dry climate is the great desideratum. It may, however, be noted that in a region the chief evil of which is its excessive dryness, the free distribution of rain throughout the year in certain oases adds greatly to the picturesque appearance of the country, and thus to enjoyment.

The Table shown in Appendix, which gives the altitude and rainfall of certain selected resorts, has a column stating the number of days on which rain falls, an important point for consideration in judging of climate.

I am saying but little about Natal, having written much about it elsewhere. The climate is good for persons with complaints of the throat and chest, those liable to bronchial affections in England being surprisingly free from them at Maritzburg; it is somewhat too relaxing, and the sudden changes in summer, as the moist sea-breezes or dry land-winds prevail, are apt to try those with irritable nerves.

Durban has greatly improved of late, but the coast lands of Natal cannot be recommended. The country rises gradually until the elevated plateaux of the Orange Free State and the Transvaal are reached. These are very dry and salubrious, and will, doubtless, come into favour again. The excessive native population of Natal will necessitate firm and wise Government.

In Natal, however, and indeed throughout South Africa, there is no need for the invalid, or even for the Colonist, to do any hard manual work, for the native population is large, and the Kafirs are ready and able to work.

On leaving Natal for the open, dreary, desolate Orange Free State, great changes take place in the climate and vegetation; many parts of this now deserted region bear evidence of having been at a distant time densely populous; remains of stone-built villages, with pottery, are found in the gold-bearing districts of the Transvaal and Matebeleland.

Bloemfontein (4,500 ft.), since attention was drawn to it (see paper, R.M.C.S. Trans. vol. lvi.), has proved of essential service to many. Still more favourable health resorts are now opened up, which were inaccessible for invalids before the discovery of gold

and diamonds rendered means of transit comparatively easy. Speaking generally, the Orange Free State is dry and cold in winter; its average elevation is nearly 4,500 ft. It is less rich in vegetation and in mineral wealth than the Transvaal. Well-appointed coaches now leave the railway terminus at Kimberley on the arrival of the mail train (32 hours from Cape Town, and 27½ hours from Port Elizabeth), those carrying the mails accomplishing the distance to Johannesburg in 57 hours. It will not be long before the railway will be pushed on, and this weary journey be materially shortened.

The sanitation of Bloemfontein is bad; fever, dysentery, and diphtheria prevail. Ladybrand is free from these defects.

The natural seaport for the gold fields, which is only 115 miles from Barberton and 346 from Pretoria, is Delagoa Bay. The railway thence into the interior is now completed for fifty-five miles, and may possibly be extended. Delagoa Bay is unhealthy in summer, and is at present marked by that stagnation which may be expected under Portuguese rule.

When the line is worked by an English or Transvaal company, obstructive influences will be removed, and there is no reason why Pretoria should not be reached in a day from Delagoa Bay—the natural port in South-East Africa.

Johannesburg (5,000 ft.), 285 miles from Kimberley, the present railway terminus can be reached by coach in 57 hours. To an invalid this drive is so exhausting, that it should not be undertaken. The slow coach, which stops for a few hours each night, is not so well appointed, and is likely to prove even more fatiguing than the fast one. The mud is often more than knee-deep, and even thirty-six oxen may prove insufficient to get the vehicle out of the mire. The crowding is always great, and the discomfort hence arising excessive.

The climate is beautiful, and the soil is only dusty in the town, or where the traffic is great. During the summer rains, however, the air is saturated with moisture and very trying, and during the winter the nights are bitterly cold.

Quarters are so dear that the visitor must be satisfied with a room which would not content him elsewhere, and Club life is naturally expensive where the distance and cost of transit are so great.

One day, when railway communication is completed, and when quarters are good and reasonable, and when the "gold mania" is in a less acute phase, this may perhaps prove a more valuable

health resort, but at present it is unsuited for health seekers, and must be left to those who are searching for wealth.

The proverbial unhealthiness of Delagoa Bay, and the whole seaboard north of Durban, Port Natal*, is dependent on the rank grass and humidity of the air and soil. Ten years ago Barberton had the reputation of being at least as fatal to the settlers as Delagoa Bay. Now, thanks to the march of civilisation, to the cutting down of trees, and specially to the burning of rank grass, it has become healthy.

Pretoria, the capital of the Transvaal (elevation 4,000 ft.), is said to be an exceedingly attractive place. It is well sheltered, and in summer decidedly hotter than Johannesburg; but scarcely hotter than the hot days of our English summer, and decidedly less hot than Paris.

In the summer months the hills, which rise to a height of 8,000 feet, are covered with mist, and the whole region is healthy.

In Bechuanaland the elevation varies from 4,000 to 6,000 feet. More rain falls than in Cape Colony. Wheat, barley, oats, &c., grow readily in the beautiful valleys, but it is found that irrigation is apt to breed fevers; the gardens are therefore kept at a distance from the houses. Above the level of 4,000 feet the immunity level is reached, and the risk of fever and phthisis is greatly diminished. Should the proposed Bechuanaland Railway be pushed forward, it will open up a country having a fine climate and great possibilities of expansion.

Experience now being gained in Tropical Africa confirms that acquired in India in regard to the immunity level.

In the Neilgherries the immunity level from fever is 4,500 ft. In the latitude of Bechuanaland it must be at a level considerably below this, say 4,000 ft.

The fever is not limited to the oozy, jungly, saline marshes north of Delagoa Bay, but is found too in dry arid tracts where the rainfall is slight, where there are no swamps or signs of superficial moisture; there may, however, be areas of damp subsoil without drainage in which solar heat leads to the development of malarial poison; the turning up of such ground produces an outbreak of fever, but when the drainage and cultivation are completed the unhealthiness is removed.

Anyone settling in the sub-tropical or tropical regions of Africa should master and act upon the rules found needful in other

* For the words "north of Durban, Port Natal," read "from thence to St. Lucia Bay." (Note by Author.)

malarious lands, or he will lay his bones beside those of many pioneers of civilisation who would not have died had they followed out wise precautions.

For instance, the rainy season and the still more sickly drying-up season should not be spent in malarious districts. The first clearance and digging up of virgin soil should be performed by those already acclimatised. Malaria being most potent near the ground, and specially when the sun has just disappeared below the horizon, it is important to sleep well above the ground. Houses should be constructed with sleeping rooms in an upper story, the windows being closed at night. The diet should be nutritious. Drink very temperately used, if at all. Exercise, taken early, should be preceded by a cup of chocolate, tea, or coffee. Protection of the head and neck from the sun should be adequate, drinking water boiled and filtered, and two grains of quinine taken night and morning.

Directions such as these, which are based on Sir Joseph Fayrer's experience, will do much to lessen the dangers of ague and fever.

In the first two or three years after breaking up and cultivating virgin land it is important not to live in the midst of the land, and if it is proposed to irrigate the garden, the house should not abut upon it, but should be placed to the windward of it, or a belt of Eucalyptus should be planted between the house and the irrigated fields. Such a belt acts as an effective screen, just as a gauze mosquito curtain keeps the malaria from one sleeping in the jungle.

The Eucalyptus grows readily after the first year or two, during which it needs attention if the season is unfavourable.

The Forestry experiences of South Africa are such as to encourage great development. A wise outlay would change the face of the country, as it has done in the neighbourhood of many of the towns. In this respect Graham's Town is a model. The annual "tree planting," when every child plants a tree (the *Pinus insignis*), is an institution which might be copied in many a neighbourhood with great advantage to the climate as well as to the beauty and attractiveness of the place.

Stinkwood, the "teak of South Africa," is a most valuable wood [specimen].

Ironwood has been found by Sir John Coode of great value for piles driven under water mark.

Bechuanaland and the protected districts extend to the Zam-

besi. The greater part of the district is suited for pasture; many of the natives wear European clothing, and show a talent for carpentering and mechanics, and the climate is said to be almost perfect. No frost in winter; rain is rare between April and October. Children may be reared as high as the Zambesi latitude (18° S.).

It is curious to note that, under the influence of alcoholics, some of the native races of a low type are dying out. But the Zulus are a powerful race, and resist the access of disease.

Leprosy is said to be spreading among the coloured population in various places.

A peculiarity has been noted in the climate on the Limpopo at an altitude of 2,880 feet, where the road from Pretoria to Khama's country crosses the river: whilst the sun is hot, 99° in the shade, cold blasts of wind, having a temperature of 70°, occur every four or five minutes. Rheumatism is very apt to be thus caused, the moist skin being dangerously chilled by the cold blast.

In the neighbourhood of Lake N'gami, at an altitude of 2,813 feet, lat. 21° S, the sickly season prevails from September to May, when it is wise to avoid this region.

At the Victoria Falls, on the Zambesi, the river is about a mile in breadth; although the elevation is 2,580 feet above the sea, it is unhealthy during the summer.

Considering the great importance of this region as a valuable field for emigration and for trade with the interior, it is important that further information should be obtained as to the climate, the means of maintaining health, the time of year at which it should be avoided, &c.

Mission and other stations now extend from the River Congo on the west to the stations of the East African Company on the Great Lakes, and so on to Zanzibar.

The interval between the Victoria Falls and the sources of the Zambesi and of the Congo, which lie side by side, is being rapidly bridged, especially by the marvellous energy of the Rev. — Arnott. A railway, as proposed, to Stanley Pool, would make the 1,200 mile water-way of the Congo accessible. Another short railway will eventually connect the Congo near the Stanley Falls with the Lake system of the interior, thus linking the east with the west; whilst much will be done to connect the north and the south when the Cape Railway is extended to the Zambesi.

Passing northward of the Zambesi, only the lower parts of whose course are known to be very unhealthy, and to the north of the

Island of Zanzibar, we come to the region recently acquired by the Imperial British East African Company, which has rights extending over a section of Eastern Equatorial Africa, between the coast and the Victoria Nyanza Lake, a territory of 67,000 quare miles, three times as large as Natal. It is bounded by mountains Kenia and Kilima-njaro, upwards of 19,000 feet in height, with high, cool plateaux forming a large proportion of the country, and affording districts endowed with a temperate climate and temperate flora, well watered, richly wooded, and offering most suitable localities for European settlers. This country is described by Mr. H. H. Johnston in the October number of *The Fortnightly Review* in a way to attract all who read it. It is the finest botanical and zoological garden in the world, and might become the granary of the East.

Large areas in these districts have a European climate, superior in salubrity to many parts of the Continent. The average night temperature in the hilly districts being 60°, and in the plains 68°, and the greatest heat registered 81°.

The seasons are regular; from June to October no rain, from November to May an abundant rainfall.

At an altitude from 4,000 feet to 8,000 feet, the climate is described by Mr. Johnston as like a Devonshire summer, becoming cooler the higher you go.

Again, Bishop Hannington when crossing the Equator at an elevation of about 5,000 feet, remarked: "The valleys and grassy or heathy downs are very like Devonshire." Above 6,000 the tangled forest begins, with dense almost impenetrable undergrowth, which clings to the mountain to the height of 9,000 feet; Kilima-njaro, rising to a height of 19,000 feet, looks lovely in the evening light.

The population around the Victoria Nyanza is very dense, and is estimated at from 10,000,000 to 12,000,000.

Dr. Livingstone, speaking of the high, dry country of the interior of Africa, says: "It is the complete antipodes to our cold, damp, English winter. Not a drop of rain ever falls between May and August. Damp and cold are never combined; the atmosphere never has that steamy, debilitating effect so well known in India and in parts of the coast region of South Africa. You may sleep out of doors with the most perfect impunity."

There is, however, a dark side to this picture. Central Africa is dotted with the graves of missionaries, devoted men, who have striven to take the Gospel into the heart of the great dark Con-

tinent, and have perished in the attempt. Let us not regard them as a failure, but as the leaders of a "forlorn hope," beckoning us onward and upward to victory and to triumph.

Professor Drummond, in his recent work on "Tropical Africa," writes: "The physical features of the great continent are easily grasped. From the coast a low, scorched plain, reeking with malaria, extends inland in unbroken monotony for 200 or 300 miles. This is succeeded by mountains slowly rising into plateaux some 2,000 ft. or 3,000 ft. higher, and these, at some hundreds of miles distance, form the pedestal for a second plateau as high again.

"This last plateau, 4,000 ft. or 5,000 ft. high, may be said to occupy the whole of Central Africa. These plateaux are but mountains and plains, covered for the most part with forest.

"The Zambesi drains an area of more than half a million square miles, and, like the Nile and other African rivers, its reaches are broken by cascades and cataracts, marking the margin of the several table-lands.

"Africa rises from its three environing oceans in three great tiers: first a coast-line, low and deadly; further in a plateau the height of the Grampians; further still the higher plateau, extending for thousands of miles, with mountains and valleys. Cover the coast belt with rank, yellow grass, dot here and there a palm; clothe the next plateau with endless forest, with low trees with half-grown trunks and scanty leaves, offering no shade.

"As you approach the Equator, Central Africa becomes cooler, because the continent is more elevated in the interior, and there is more aqueous vapour and cloud than in the more southern lowlands.

"The climate of the Equatorial zone is here, as elsewhere, superior to that on the borders; at night it is cold, two blankets being needed. The shade thermometer rarely reaches 95 degrees."

The foliage in the tropical regions is luxuriant; in the southern parts of the continent the flora is remarkably distinctive. Trees are specially deficient. Each species is as a rule limited to a small area. Foreign plants are very slow to become acclimatised, many plants remaining for five, seven, to ten years in a dormant state, and only flower when rain and temperature coincide with their requirements. A region generally devoid of vegetation may after rains spring into wonderful luxuriance.

At least one-third of the flowering plants are succulent, and there is a marked prevalence of thorny plants.

The mention of flowering plants reminds me that I am digressing from my subject, which is Southern, rather than Central Africa—a digression which I hope my hearers will forgive, considering the special interest at this moment attaching to tropical Africa, not alone from its political, but from the human interest attaching to the loss of Colonel Barttelot, and we may fear also to that of Stanley himself.

In Cape Colony there are millions of acres of land lying waste and barren for lack of irrigation and improved methods of farming. An infusion of European energy and capital will do wonders, and there is good reason to hope that in Bechuanaland a fresh plantation of European settlers will soon take place, and that in a few years this fertile country may have undergone such development as to make it a haven of refuge for health-seekers as well as agriculturists.

The time has not yet come for a consolidation of the various Colonies, but the solidarity of South Africa is worthy of the consideration of our statesmen, and will one day—let us trust by pacific means—be accomplished. Cape Colony comprises 240,000 square miles. If Bechuanaland is added to this, a territory is formed 420,000 square miles in extent—twice the size of France—having a population of 1,800,000, and a capacity for future development impossible to estimate.

The arid, almost rainless region now belonging to Germany need not be envied; the fever-stricken region, north of Delagoa Bay, need not be grudged to Portugal, seeing that we now have within the sphere of British influence the high central tableland, which forms a healthy line of access to the mountains and lakes, whence arise the Zambesi, the Congo, and the Nile.

The future development of "Congo Free State," and the East African Lakes Company, will be stimulated by the approach of a railway to the Victoria Falls of the Zambesi. The country 800 miles in length between Kimberley and the Falls, has an average elevation of 4,000 feet, and for the most part is not unhealthy. Those who are willing to follow Stanley's clearly laid down laws as regards place of bivouac, conditions of exposure to wind, &c., may, without great risk, explore and settle in the upper reaches of the Congo and the Nile. The terrible fatality that has fallen upon our pioneers, who have approached the tablelands of the interior from the mouth of the Congo or of the Zambesi, is due to the pestilential nature of the swamps and low sea coast levels. When Equatorial Africa is reached without

passing through these fever-stricken regions, it will be robbed of half its dangers.

Had time permitted I might have enumerated some of the classes of disease for which the South African climate may prove of special benefit. It only remains for me to apologise for having taken you over so much arid ground. If you have found the subject a dry one, I may remind you that this dryness is in harmony with the nature of the Great Karoo district, which determines the character of "South Africa as a health resort."

TABLE SHOWING ELEVATION AND RAINFALL IN SOUTH AFRICA.

	Elevation in feet.	Annual Rainfall in inches.	Annual Number of Days of Rain.
Aliwal North	4,348	18·36	61
Beaufort West	2,792	7·91	25
Bishop's Court (near Cape Town)	250	56·65	102
Bloemfontein	4,540	16·97	70
Burghersdorp	4,552	11·39	41
Calvinia	3,100	4·28	28
Cape Town	15	23·72	70
Ceres	1,493	28·18	67
Colesberg	4,407	12·59	33
Cradock	2,855	9·18	45
De Aar	4,180	19·06	60
Dordrecht	5,200	18·36	61
Fraserberg	4,200	2·92	18
Graaf Reinet	2,463	9·60	39
Graham's Town	1,800	22·33	84
Johannesburg	5,000	..	..
Kimberley	4,012	20·52	64
King William's Town	1,273	16·48	81
Knysna	30	31·84	93
Kokstad	4,153	22·39	67
Ladybrand	5,000	27·10	87
Maritzburg	2,197	31·87	141
Middelburg	2,197	11·38	39
Pella	1,800	0·85	3
Port Elizabeth	181	19·71	84
Pretoria	4,007	30·74	64
Queenstown	3,548	16·70	76
Richmond	4,736	10·53	33
Simon's Town	20	36·02	110
Table Mountain	3,349	55·66	..
Tarkastad	4,280	8·85	55
Worcester	794	7·51	39
Wynberg	164	43·40	94

Discussion.

Lieut.-Colonel Sir Charles Mitchell, K.C.M.G.: I was altogether unprepared for being called upon to open this discussion on a paper that really is hardly one which a layman may venture to criticise; but if a layman may be allowed to say that his experience during a residence of eight or nine years in the country spoken of has almost entirely corresponded with that of Dr. Symes Thompson, then I am quite ready to give that testimony. I am sorry to find that Natal, with which I am most familiar, has been so scantily—I had almost said, scurvily—treated in the paper; for I, in common with South Africans themselves, have always regarded Natal as the garden of South Africa, and that both for the invalid and the man in health to live in Natal was, so far as climate goes, the nearest approach to a residence in Paradise that could be met with in any part of the world, and I often regret that I ever left it. I may say also that in my own personal experience I have found some very remarkable cases of cure of chest disease in Natal. I remember I had hardly been in Maritzburg more than a few hours when a man who had met me only accidentally at home came running across the street to embrace me as the one individual whom he knew in the place. He had come from Bloemfontein, the recognised sanatorium of South Africa, where he had gone from England with one of his lungs severely affected. He told me the place did not suit him, and that he was going home to die. I persuaded him to stay in Maritzburg, however, and now, after a lapse of twelve years, he is in Natal, a comparatively healthy and useful professional man. I certainly have a strong opinion that Natal is not unworthy to be considered one of the health resorts of South Africa. I remember another case in which its health-giving properties have been proved. It was that of a banker, a gentleman well known to many in this room, who went out there only as a last resort, and with but little expectation of surviving for any length of time after his arrival; but the result was that after living in the Colony for more than thirty-five years he died quite an elderly man, and from a disease quite different from that affecting the chest. I would strongly recommend all those desiring a change to try Natal, and, if they do not get such a dry climate there as in other parts of South Africa, they will enjoy the beautiful scenery and agreeable society into which they will be thrown—and agreeable society, let me say, is something of

which some parts of Cape Colony are rather deficient. You may say that I am standing up for my own country, and so I am, for I really came here in the hope of finding Natal spoken of as the place to which Dr. Symes Thompson was going to send a stream of interesting invalids. I do not think, however, that South Africa is a place for those invalids who wish to spend only one winter away from the *beautiful* climate which we are being permitted to enjoy here at home just now, seeing that the summer they come upon in South Africa is the most unpleasant part of the year. With such people, then, I do not think South Africa will be a very favourite place, or that it is likely to supplant the Riviera in their estimation. I wish it was, for I thoroughly agree with the lecturer as to the desirability of diverting to our beautiful Colonies a portion at any rate of that wealth which health and pleasure seekers shower upon the Continent and a number of foreign countries, and which would be of great benefit to all those who are struggling for an existence there with very little capital. Depend upon it, South Africa, like all British Colonies, is all the better for having as much money brought into it as possible. Invalids bring money with them, and for that reason, if for no other, I think it would be a very good thing if doctors would discover that our British Colonies are good health resorts. I do not know that I need say any more, and I will conclude by expressing what must be the opinion of everyone who knows South Africa, that we have had a most interesting and valuable paper from Dr. Symes Thompson, and I trust that other English physicians will follow in his wake, and consider the claims of our Colonies to share in the cure of English invalids.

Mr. L. A. Vintcent, M.L.A. (Cape Colony): Sir Charles Mitchell commenced by saying that he thought Dr. Symes Thompson had treated the Colony of Natal rather scurvily. If that be so, I do not think it was done intentionally, and, at all events, I, as a resident in the Cape Colony, have no reason whatever to complain of Dr. Symes Thompson's treatment of the Colony with which I am more particularly connected. If the lecturer had this evening confined himself exclusively to the medical aspect of the question, I certainly would not have attempted to come before you as a critic of the paper we have heard read; but, as you are aware, Dr. Symes Thompson has generalised, and has shown a wide sympathy in dealing with questions connected with South Africa generally. And here let me say, in answer to Sir Charles Mitchell, that Natal is included when the lecturer

speaks favourably of South Africa as a health resort, because he deals with South Africa as a whole. Dr. Symes Thompson has ranked South Africa among the first of health resorts, but he has also reviewed some of the disadvantages to which invalids making a sojourn there are liable. One of the drawbacks to which he called attention was the difficulty of locomotion at some places, but that is fast being overcome. A few years ago railways were scarcely known in South Africa; at the present moment the Cape Colony alone has upwards of 1,600 miles of railways in full operation, whilst Natal is extending its lines with rapidity. Furthermore, during the last session of the Cape Parliament an extension was sanctioned from Kimberley northwards, and since I have been here I have learned that it is the intention of a company, formed in this country, to undertake the construction of a line from beyond Kimberley, through British Bechuanaland. I only hope it will be possible to come to an understanding with the Republics, so that they will see that it is also to their interest to link on their lines with those of the Cape Colony and Natal; and if this is accomplished there will be a system of railways in South Africa which will enable travellers to go across the land with comfort and convenience. Another difficulty to which the lecturer referred was want of hotel accommodation, and those who know South Africa must sympathise with him in his complaint; but I say, apply the rule which is recognised in commercial matters—that is, create a demand, and the supply will follow. What has been the practice hitherto? Colonists have come to the Mother Country, but it was a very rare thing for anyone from the centre of the Empire to visit the Colonies; and if you can send to South Africa even a tenth of the tourists who now travel on the Continent, you will find that hotel accommodation will be provided in plenty, and of a kind to suit the needs of all travellers. Dr. Symes Thompson also referred to the want of sanitation in several towns, more particularly Cape Town, and I am sure he will be glad to learn that since he left the Colony the Corporation of Cape Town have secured the services of a well-known and eminent sanitary engineer from the Mother Country, who is now engaged in devising means for putting the drainage of Cape Town in a satisfactory condition. In the course of his very interesting address, Dr. Symes Thompson also remarked that the present was scarcely a suitable time for settlers to go to South Africa, and he then referred to the financial depression which had existed there for some considerable time. Now, there is no

denying the fact that serious depression has existed, but I would ask, what part of the world has lately been free from agricultural, or commercial, or financial depression? Unfortunately, a wave of stagnation has passed over the whole of the civilised globe; but I am happy to think that indications are not wanting of the passing away of this depression—certainly it is to some extent mitigated in South Africa. It has been said that we have depended in the past too much upon the diamond industry and gold speculation. Well, no doubt that is so to a certain extent, and the lesson we have learned is that we should not depend exclusively upon diamond digging and gold digging, but that we should give more attention to developing the ordinary, and what may be called the constant, resources of the country; and in this regard I think the Cape Colony has certainly been advancing in the right direction. You will have noticed that an Agricultural Department has been recently added to the Colonial Government, and I am happy to say that good results have already followed its inauguration, the wine trade now being in a more flourishing condition, and the condition of the wine itself much improved. Its effect must also have been felt in London by those engaged in the wool trade, seeing that a Scab Act has been passed, and, in addition to that, attention has been directed to the improvement of the breed of horses. We must not lose sight, however, of the discovery of gold in the Transvaal. It is now admitted, I think, as a fact by everyone that the gold industry—at all events in Johannesburg—is established on a firm basis, and that we may look forward in the future to a much larger output of the precious metal than in the past. I do not contend that we must depend solely on this output of gold, but the fact of its existence in the Transvaal must materially and beneficially affect the whole of the trade and commerce of South Africa. I think, too, the day is not far distant when we may look for important developments farther north, in British Bechuanaland and beyond. And here let me say how much I rejoice to learn that a protectorate had been proclaimed, and that the sphere of British influence now extends to the banks of the distant Zambesi. I avail myself of this opportunity of publicly stating that South Africans owe a debt of gratitude to the statesmen in this country and in the Colony, who have sought to keep open this gateway to the interior, because that gateway gives us a position in South Africa which we shall be proud to possess in the early future. If only a portion of the expectations which are entertained are realised, I

feel assured that before long the iron horse will be running from the Zambesi in the far north to the Cape of Good Hope in the distant south. And, as you know, in this age of progress it is the iron horse more than anything else which amalgamates conflicting interests and brings together those who have long been separated. As a Cape Colonist, I tender my hearty thanks to Dr. Symes Thompson for his interesting paper, and also for the broad sympathy he has shown in dealing with the Colonies in a way which cannot but tend to promote the union of the whole of the Colonies with the Empire, and to the consolidation of that Greater Britain which we all hope and desire to see established on a lasting and permanent foundation.

Mr. John Mackenzie (Bechuanaland): It has been a great gratification to myself, as I have no doubt it has been to you, to listen to the paper which has been read this evening. For myself it has been a special gratification, inasmuch as Dr. Symes Thompson has been teaching the geography—the medical geography—of South Africa. I have been teaching political geography for some time, and the one throws light upon the other. Perhaps it may have occurred to some of you in listening to the paper that it was directed chiefly towards the case of those suffering from consumption who were in the higher walks of life, who could go to the Riviera if they were so minded, who could have a voice in selecting the kind of hotel to stop at, and all that. But we must agree that, after all, there is another and a larger class of the population also suffering from this dreadful disease, and it would be a patriotic thing to do, in the highest sense of the term, if any scheme could be devised by which those thus suffering, or predisposed to suffer, could be transported to a more congenial place of abode. Not long ago I had my attention directed to a young man in Scotland who had grown rapidly, till he was over six feet in height, and who eventually died of consumption. He had, of course, been under the hands of the family doctor, who had had charge of the case from the beginning. It was only a short time before his death, however, that it was remembered that South Africa was a good place for consumptives, and some steps were taken to send him there, but it was too late. I do not know what is the usual practice of medical men in such cases, but it certainly would be a kind thing to say at the outset of the disease that if the patient remained in this country he would almost certainly die. With reference to what has been said about the relative suitability of the different parts of South

Africa, it does not matter whether you are in Natal or Cape Colony, because as soon as you leave the coast line you continue to make a gradual ascent, until you find yourselves in an elevated tract of country. I think, therefore, this fact would be better impressed on our minds if we call this vast healthy region "the Highlands of South Africa." "Highlands," you know, is a nice name, and fully and truthfully describes the country some fifty or sixty miles from the sea coast. With reference to the heat of the country, you have been told about the degrees of temperature, and all that, which you will, no doubt, forget; but you will remember how hot it is there if I tell you that, were you standing on the sand talking, and saw a piece of grass growing near you, you would instinctively move in that direction and take up your stand upon it in preference to the scorching sand. This heat, however is nullified by our fresh cool nights in summer and our keen frosty nights in winter. Thus, every morning we start fresh and with a cool earth. Then you have been told in meteorological parlance how dry it is; but I daresay you will forget that, too. Not so, I think, if I tell you that the brass and wooden parts of a ramrod get quite loose owing to the excessive dryness of the atmosphere. This means that the hard, dry wood which is selected by the gunsmith in this country gets dried over again and shrinks. In a country like that, of course a young man or a young woman with consumptive tendency has a chance. I have all manner of respect for those wealthy patients, nervously anxious to be well, and with little else to think of, who are not pleased with this kind of food and that kind of food; but still, I must say I think more of those poorer people who are willing to be useful and to do good work in the world if they could only stave off this fell disease. I think it would be even a more desirable thing to help such as these to a sphere of useful work than to assist those others to enjoy themselves to a still greater degree who are enjoying themselves already either in the South of Europe or elsewhere. It does not matter much to a country, as a country, where these dear people enjoy themselves. They will enjoy themselves, and they will have the kind of food and drink they want, wherever they may be; but it is a point which may usefully be studied, how those earnest but consumptive workers, who would be useful citizens in other climes, but who die in this country because they have no means of reaching the better land, may have their lives prolonged and be enabled to serve their family and their fellow-men by

being conveyed to a more genial climate. Of course the voyage to the Cape is a most delightful one. I think there could be no more delightful journey. Especially after you leave Madeira, it is just one long-protracted pleasure. With reference to travelling in South Africa, and the wayside accommodation, I do not think that we should seek to set up the European standard too rigidly. I knew a lady out there whose supreme idea was, when, to use a common expression, she felt "run down" through hard work, that there was nothing so refreshing and reviving as travelling in an ox-wagon; and when she could not travel in reality she would bring her ox-wagon to the door, so that she might at least spend the night in it, and thus half persuade herself that she was travelling! The fact is that there is nothing so healthful as this simple, open-air conveyance. Travelling in it, you are in the fresh air all day and all night, and yet there is no draught. I am afraid they have been too kind to Dr. Symes Thompson in South Africa, and have not allowed him to travel in this primitive way. If they had, he would have got a good shaking, no doubt, but he would also have discovered that it is a most health-giving mode of locomotion. The cure is being effected as you travel leisurely along. There is one statement in the paper which rather astonished me. Dr. Symes Thompson says there is a kind of fever, which is not found in marshy regions and damp parts of the country, but only in dry districts. I have not come across that kind of fever myself. The only sort of fever not of a climatic nature that I have had to do with was one due to specific contagion—a sort of typhoid fever. A typical case of the advantages of South Africa as a health resort which I would like to leave with you is this. Some time ago there was in Scotland a young fellow who had got to the top of the tree in his profession, and might have occupied that respectable but somewhat circumscribed position the whole of his lifetime. He thought that the tree was not high enough. He thought especially that the health of his wife and children was a matter which he should consider as a far-seeing man, and so, disregarding the position he occupied, and thinking only of the health of his wife and children (his wife belonging to a family in which consumption had appeared), he made up his mind to go to South Africa. Well, he went out first and made the nest, and then took his wife and family over. They are all there now, and doing much better than in Scotland. This dreadful and most deceitful disease can be cured if the person leaves this country in time. But I think

that prevention is better than cure. When a man knows that chest complaint is in his own family, or that he has married into a consumptive family, why should he wait until the messenger of death has actually knocked at his door? Why should he not go out to South Africa, where there is a finer sun and a drier, purer atmosphere than you can boast of in this part of the world? And if a lot of nice people go out society will at once be made, but if everybody holds back there cannot be any cultivated society there until it is evolved on the spot by the elevation of the present inhabitants. Dr. Symes Thompson said something about the present commercial depression in South Africa. Well, now surely is the time to get farms cheap. Now is the time for you to go to South Africa, because times are depressed. Money is scarce, and yours will go further if you wish to purchase land than if times were better. I would commend especially the country with which my name has been connected by the Chairman. If I have not thought it necessary to "stick up" for Bechuanaland, it is because it makes its own appeal as you look at it on the map. It is a big country, and you do not know all about it yet. You have a good map, but it is not quite up to date. Downing-street has got ahead of Northumberland-avenue. A little touch of colour applied to the map up to the Zambesi, and you would see what the Imperial possession of British Bechuanaland means. It means that this vast territory, which begins at the northern border of Cape Colony and extends to the mighty Zambesi, has been conferred upon us by its only actual possessors—the native chiefs and peoples; and I am glad to say, in conclusion, that Her Majesty's Government has announced a protectorate over this splendid addition to her Empire—the possession and the holding of which will without doubt lead to the consolidation and the prosperity of the whole of South Africa.

Mr. Stanley Leighton, M.P.: I should like to pay a compliment to Dr. Symes Thompson which is somewhat in the nature of an Irish bull. So much has his lecture convinced me of the advantages of going to the Cape for a holiday that I took a ticket yesterday to go there for the Christmas recess, and I have naturally taken a deep personal interest in all that he said on that account. He has opened up to us an aspect of South Africa not political, not commercial, but social. There is something of novelty in his suggestion. It is only a novelty, however, to those unacquainted with the conditions of the Cape—climatic, industrial, and social—for those who know them are already aware of the advantage

and the interest of a residence there. He speaks as an expert, as a man of science and of practice, and he has not used any exaggeration. He has not spoken with the sort of exaggeration with which men usually recommend their especial hobbies. He has told us, for instance, that the hotels at the Cape might be improved. I think what Mr. Vintcent said is true—that the supply will depend on the demand. Here I would make a suggestion to the enterprising owners of the steam-packets which ply between London and the Cape, and which, I understand, are "floating palaces." It is that they should provide land palaces also, and that we should be able to take in London our tickets for the journey, and that at our destination we should find rooms ready for us in land palaces belonging to the companies. I hear, however, a very good account of the Wynberg Hotel. There is this great recommendation in regard to the Cape—that the steamboats and the post are very regular, so that you may go there easily, and, when you are there, you do not feel cut off from the rest of the world, for the posts arrive every week. What has been said about the hackneyed-resorts on the shores of the Mediterranean is very true. Why should people so often go to such places when they can find every variety of climate in our own Colonies? What is there to do at Cannes, or Nice, or Algeria, except to attend an intolerable succession of afternoon teas all day long? The difference between going to some foreign watering-place and to a British Colony is just the difference between walking over your own farm and walking over that of your neighbour. The ties which bind us to the Colonies are manifold. There is the political tie, which is founded on law, and that is sometimes broken; there is the commercial tie, which is founded on money, and money, a great authority tells us, is the root of all evil; and there is the social tie, which is founded on inclination. I would appeal to all those who know anything of the Empire whether they do not agree that the last is the greatest of the three.

Sir Donald Currie, K.C.M.G., M.P.: I am hardly prepared to speak to you about "floating palaces," for this is not the time to do so; but I am ready to offer my warmest acknowledgments to the excellent lecturer, and to thank him, as many others do, for his very valuable and interesting paper. I have been in South Africa, and have seen as much of it as, perhaps, anyone in the room. I can bear testimony to the fact that there are not many good hotels, but you have an excellent climate. It is said hotels will be provided when the necessity arises. Well, I have often

been told by parties visiting the Cape that it was very difficult to find suitable accommodation for those who were in delicate health. In some places there is very good accommodation, but there are not many really suitable hotels for invalids. It is not the business of the steamboat owners to provide this accommodation. I did think of it; in fact, the necessities of my own position in travelling about made me desire such accommodation upon land; but I could not see how it was possible for me to take in hand the establishment of hotel accommodation, even near the sea. Certainly I have taken a considerable interest in the hotel now in course of construction at Grand Canary, on the way to the Cape, and I should be very glad to see similar enterprise shown in places I could name in South Africa, suitable as health resorts. But, as I have said, there are good hotels, some of them very comfortable indeed. This need of good hotels throughout the interior and in health-giving districts is a great want for invalids and ordinary travellers, and, most of all, of course, for invalids. I find frequently that persons entrusted to our care for conveyance to the Cape speak of this matter on their return, and regret that owing to the lack of accommodation, they have been unable to stay as long as they desired, and to enjoy the full benefits of the admirable dry climate, so beneficial to health, which distinguishes that part of the world. The high ground of the Transvaal and the Free State, as well as of the Cape and Natal, is an agreeable and health-giving territory. I have travelled about 1,000 miles by carriage over the Veldt, sometimes good roads, sometimes not. I cannot say that the accommodation provided for the ordinary traveller by wagons, referred to by a preceding speaker, is all one can desire. Every day, however, the means of locomotion are being improved. It must interest people in this country, especially delicate people, to know that South Africa is a place where they might prolong their existence, and lead a happy life. I myself could tell you of many cases of ladies and gentlemen, of young people and old, who have recovered their health through a residence in that country permanently, and of others who after a short visit have derived enormous advantage and permanent benefit. That, however, would lead me into some relation of circumstances connected with their mode of getting there, which would have very much the appearance of an advertisement, and that is not within the scope of my observations. South Africa is, I say, a fine place for health. The necessity for good accommodation on the part of travellers passing to and from the gold mines and the diamond

fields will soon bring about for those who seek a health resort the accommodation which is desired. You will find shortly—indeed every day proves it—that there is larger encouragement now given than before to those who can provide suitable hotel accommodation for voyagers, whether in search of treasure and in business, or for restoration of health. Delicate persons require not only a good climate, but good house accommodation and home comforts, with kind and careful treatment. This is one of the first requisites which occur to medical practitioners in advising people to go for health to the Cape or anywhere else. I am sure such provision will be made in many parts of South Africa, and it will pay to do it. Whether your friends go for a longer or for a shorter period, there is no part of the world in which they can derive more enjoyment and real benefit, or where a more kindly welcome will be offered, as it was offered to me at every step of my journey, by a warm-hearted, hospitable, and generous people.

Mr. Walter Peace: In Mr. Stanley Leighton's remarks I noticed that he never used the words South Africa, but only "the Cape," and in that he indicated the fact that the bulk of the lecturer's remarks were directed, not to South Africa generally, but to Cape Colony. I do not grudge any tribute to the Cape, but I regret that so little attention was paid by Dr. Symes Thompson to a Colony which is not behind the Cape as a valuable health resort. I assume that he has not been in Natal—at all events, in recent years—otherwise he would not have omitted reference to such places as Richmond, Greytown, York, Ladysmith, Newcastle, and other places in Natal where invalids might go, and where they would not have to mope away, as he says they would in the Karoo. But these omissions are not so important as some remarks I will quote:—"The coast lands partake of the rather unhealthy character prevailing all round South Africa;" and again—"Durban has greatly improved of late, but the coast lands of Natal cannot be recommended;" and again—"The proverbial unhealthiness of Delagoa Bay, and the whole seaboard north of Durban," &c. When I read these remarks, I felt quite sure the lecturer had not been in Natal for, as people say, "the age of a blue moon." I have lived on the coast lands of Natal for sixteen years, but I will not ask you merely to accept my experience: I will quote some figures which Dr. Symes Thompson will admit ought to carry conviction. In his last report, the medical officer

of Durban states that the population is 18,433, of whom 9,044 are Europeans, and that during the five years ending July 31 the average rate of mortality was 18·574. This includes cases of persons suffering from Delagoa Bay fever, who were brought to Natal to die, and consumptive patients from England, who had deferred their journey until it was too late. I think that is a rate of mortality that will compare very favourably indeed with London, which is said to be the healthiest city in the world. There is this peculiarity about Durban, that during the past year more than half the whole number of deaths were of children under two years of age. It is not convenient before an audience of ladies and gentlemen to discuss the causes, but I may mention that the medical officer says these deaths are to a large extent preventable, and have nothing to do with the situation of the town. I want also to point out that in Durban during the past twelve months only sixty-eight persons died who were over two and under fifty years of age out of a population of 9,044. It is quite impossible, therefore, to allege that any unhealthiness whatever prevails on these coast lands. The unhealthiness is very great certainly about Delagoa Bay, but it extends no further downwards than St. Lucia Bay, and I may state that the people residing in the interior of Natal are in the habit of going to the coast land for their holidays, which they certainly would not do if fever was suspected to prevail. As to Delagoa Bay being the natural seaport for the Transvaal, I happen to know something different, but I will not stop to discuss that now. The richest gold fields yet discovered in South Africa are in the region of which Johannesburg is the centre. Dr. Symes Thompson says this is 285 miles from Kimberley, the nearest railway station, and can be reached by the coach in fifty-seven hours ; but, as a matter of fact, Johannesburg is seventy-eight miles further from Kimberley than from Ladysmith, and the time occupied in travelling from Ladysmith is only twenty-seven hours (by day) as against fifty-seven hours' continuous journey from Kimberley. I need not now discuss the question as to whether this is the time for people to go out to South Africa ; I will only say that there never was a time so suitable as the present for those who have confidence in themselves, and wish to improve their position in the world.

Dr. J. A. Ross : In regard to one point, I would remind you that consumptive patients can get a warm moist climate without going to the Cape—for instance, along some parts of the Mediterranean littoral, where they may enjoy home comforts and luxuries, with

amusements. What we want, however, is a climate different from that of the Mediterranean and differing also from that of the Engadine, for persons who have not derived any benefit from spending time in those regions. The climate of the Cape highlands differs, I think, essentially from both. I will take Aliwal North as an example, not because it is the best highland resort, but because it is a very good one, and, moreover, because we have very trustworthy meteorological statistics from it, for which the Cape Meteorological Commission is indebted (and we, too) to Mr. A. Brown. Let me digress for a moment: these meteorological returns are not always accurate, not because the observers are lacking in enthusiasm—they are much interested in the subject. I accidentally found out the fact that some of the returns, so far as the relative hygrometric state of the air is concerned, are not trustworthy. Matjesfontein is a railway station 2,600 feet above sea level, in the midst of a dry, healthy country. While there one day a warm, dry wind was blowing; yet the hygrometer indicated a large percentage of moisture. I knew this could not be right, and on examination I found the cotton of the wet bulb thermometer thickly impregnated with a salt; the thermometer bulb was also coated. I changed the cotton, and cleaned the bulb in some vinegar, with the result, if I remember rightly, that the relative humidity, instead of being, as at first indicated, 81 per cent., was, as was afterwards indicated, 43 per cent. At another station, some weeks afterwards, I found the hygrometer registered a relative humidity of 77 per cent., instead of 57 per cent., which it should have done, as afterwards ascertained; so that all the returns for these stations most likely indicate a dampness which does not exist. Mr. Logan and Mr. Jackson, the observers at these places, take much interest in this subject, and are now, I believe, using rain water for the hygrometer, the error being due to the large amount of lime salts in the water from springs. To return to Aliwal North; it lies, as you have been told, over 4,000 feet above sea level; it has an inland altitude and dry air, thus differing importantly from Mediterranean health resorts; it has an inland altitude and continuously dry air, with no snow mountains surrounding it, and no damp in spring time when the snows melt, thus differing from the Engadine. Going over the returns for two years (1885-86), I do not find at any time at 8 a.m. (the hour when the observations were taken) that the air was saturated, the dew-point being always lower than the actual temperature; and taking the year 1883, when

observations were taken at 8 a.m. and 8 p.m., I find that, as a rule, the air was even drier at 8 p.m. than at 8 a.m. This fact is noteworthy, for the heat of middle day would naturally take up any moisture available, and, with the cooling of the air, this would be condensed at sunset. There is a considerably larger rainfall in summer than in winter, but this is due to the thunder-showers, which cool and refresh the air, but do not produce continued dampness—in fact, the relative humidity of the summer months is less than that of the winter. The dryness of air is not too great, the mean relative humidity during 1883 at 8 a.m. being 67 per cent., and at 8 p.m. 60 per cent. I am informed by Mr. A. Brown that he has used rain water for his hygrometer. The climatic effects of altitude on ocean islands or on the sea coast must differ importantly from those of inland altitude; altitude near the sea must cause, for obvious reasons, an increased relative dampness; but altitude far removed from the sea coast—especially if ranges of mountains intervene—can scarcely do so, for the air has already been deprived of its moisture. It is desirable —at least, so far as the Cape is concerned—that the inland highland resort chosen should have mountains in its neighbourhood, not closely or continuously surrounding it, but studded about at a moderate distance: there being rarely snow, the dry wind comes down, cooling and bracing, supplying the place of the ascending air from below, which has been heated by radiation from sun and ground. Phthisis not infrequently develops amongst people on the coast, and they go inland—so well do they know the value of the highlands. It is stated, too, that cattle become affected with tubercle in low damp mountain valleys near the coast, while those on the Karoo highlands enjoy an immunity from the disease. I have known cases of European invalids, first trying the coast belt, being forced to move upward, until at last upon high ground relief was obtained. Weber, Hammond, and many others speak in favour of altitude with dryness and coolness. Dr. Symes Thompson, whose most able paper I have listened to with interest and advantage, and whose more technical paper on the same subject I had the privilege of hearing last night, I am glad to find speaks so highly of these inland highlands. He criticises the hotel accommodation and sanitary arrangements, which criticism draws from a distinguished Cape Colonist the remark that if a demand be created hotels will soon be built. This is not the way the Swiss went to work. They built the hotels first, and created the demand and diverted the

traffic. This plan could not be generally adopted at first at the Cape, but I would suggest that *one suitably situated* town provide a comfortable hotel; and I think if this were done sojourners would not be wanting. Irrigation has been touched upon, and it is intimately connected with this subject, inasmuch as it is closely related with quality, quantity, and variety of food. I visited and spent a few weeks in the district of Middelburg—right in the centre of the Karoo—and was impressed with its capacity from what I saw and heard; but, as in most other districts of the Colony, there is no proper system of irrigation—no economic system. Even to the picturesquely situated little town of Middleburg the water is led in an open furrow, the ground on each side and below soaking it up like a sponge, and the dry warm air lapping it up above. Middelburg has an excellent up-country hotel, celebrated in the Colony for its good food and cooking; and I say, too, that at Wagenaar's Kraal (4,500 feet above sea level), near Beaufort West, there is a farm where a very comfortable winter home with kindly people may be enjoyed, but it is necessary to make arrangements beforehand, for the place is much sought after. An equable climate means, as I understand meteorology, a more or less moist climate, and a dry climate is necessarily, almost in proportion to its dryness, a variable one: in fact, it is the blanket of damp air which makes the equable climate—thus in the Cape there are very warm days, but cool nights. I have long thought that some such experiment as was made in connection with Madeira some years ago might be tried with regard to the Cape highlands—that is, to send out a number of judiciously selected invalids to be supported for a year. This would test the value of the Cape as a sanatorium.

Major-General J. Dunne: I notice that most of the gentlemen who have spoken to-night have had a personal interest of some kind in the Cape. I stand here totally disinterested in the Cape, except as a soldier who, for some four or five years in bygone times—in the eastern and western districts and Natal—lived a healthy and happy life, who was always kindly received, and who really did not find the excessive want of accommodation of which we have heard so much to-night. I have been pretty nearly all over the world. I have been in the Riviera, in Egypt, in India—and, in fact, in pretty nearly every climate—and I can say that about Grahamstown, King William's Town, and in fact all over the Cape and Natal, an elasticity of spirit—a *verve*—is imparted

to people by the bright, clear air which you do not get in any country or health resort in Europe. If you want to give a picnic or take any amusement in the open air you cannot be sure in this country that you will be favoured with fine weather, whereas there you may make arrangements for five or six weeks ahead, and be sure of a bright, clear day, and a sun which, although powerful, never carries a sting in it. Whenever I have had the opportunity I have pointed out the immense advantages that may be derived by people from time to time using South Africa as a health resort, instead of going to those miserable, doleful places like Madeira, where you see people being carried about in canvas hammocks, and the sight of which is alone enough to make one feel ill. As to the advice that you should select one particular spot as a health resort, I say that would be miserable. You would have everybody meeting together, and talking of their particular complaints. In that vast continent of South Africa everybody can find a place for himself. I recommend everybody who has the money, and wants to spend a happy winter, to go to the country whose merits have been so ably lectured upon to-night.

Mr. Arnold White : I have no intention of inflicting a speech upon you. If I had originally had such an intention the ground has been cut from under my feet by the gallant General who has preceded me. I have no interest in South Africa to the extent of a penny, and therefore, had I intended to pose as a disinterested advocate of this health resort, I have been forestalled. I feel I am here under false pretences. I am ignorant of the laws of health, and have but a visitor's knowledge of South Africa also, for I am not one of those who believe that by a few visits one is competent to stand before an audience in the metropolis of the world and lay down the law as to what the condition of things should be in the knuckle-end of the world. I have listened with great interest to a number of gentlemen, all of whom have lived in South Africa, and if I wanted practical evidence of the effect upon the physical, mental, and moral health of residence in that part of the world, I should find such evidence in the sinewy vigour of the speakers and the hue of health which animates their countenances. If I may throw my stone on the cairn of testimony which has been raised to-night, I would say, as one who has travelled in most parts of the earth, that there is no part of the world's surface which combines in so marked and unexampled a degree the conditions of life under

which the happiness of rich and poor alike may be secured as under the climate of South Africa. I have had some amount of experience as to the effect of this climate on the health of poor men, and I can only say that I know of no more gloomy destiny for gentlemen of the medical profession than the lot which inevitably follows them when they settle there. The place is too healthy; there is little necessity for them. People go out there with the fragment of a lung—the germ, the protoplasm of a lung—and arrive home with two strong lungs, and live three score years and ten, or like the man in the ballad, often "to the age of one hundred and ten, and die from a fall from a cherry tree then." But the subject should not be treated in this light manner. It is an extraordinary thing how in South Africa you see the second generation improve in a manner to which I know no existing parallel except in California. You see men and women in the second generation increase in stature and health to an extent which shows that man may add a cubit to his stature. After the eloquent way in which the advantages of South Africa have been recommended to you, I feel it unnecessary to say a word in addition, and if I did I should be a prejudiced witness, for every time I return to South Africa I feel it lays hold on me in a way which prevents my expressing that impartial testimony which has been placed before you by more eloquent speakers to-night.

Mr. Morton Green: At this late hour I must be brief. Moreover, much that I wished to say has been said by previous speakers. As a Colonist of some thirty years' standing, I have simply to endorse the general tenour of the remarks made with reference to this paper. One or two points I may refer to, for we have been generalised about till we have been almost generalised out of existence. In one of his works Mr. J. A. Froude says that in travelling through the Cape Colony he was much pleased to find homesteads on each side of the road, and that cultivation was going on to a great extent; but going through the Orange Free State into Natal he found a beautiful wilderness. If he had inquired into this state of things he would have found that the laws with respect to the tenure of land enable the property owner in the Cape Colony to collect toll from the wagons for grass and water supplied oxen, mules, and horses, and he therefore builds his homestead close by the roadside, for obvious reasons. But in the Free State and Natal a different law exists, for there the proprietor is bound to give water and grass gratis, and the result is that on a 5,000 or 6,000 acre farm the

homestead is built as far from the roadside as possible, in order to avoid contagion from cattle diseases. As to the coast lands above Durban being unhealthy, I may mention that the same, right up to the river Tugela, the boundary of Zululand, are occupied by sugar and tea planters, who are in the enjoyment of good health and prosperity. Some months ago, at the close of a Natal summer, I journeyed in company with a young English gentleman (travelling for his health) by rail and post cart, right along the coast to the border of Zululand, where we much enjoyed the hospitality of the tea planters for some days. This gentleman, whose relatives are in this room to-night, returned home in the enjoyment of excellent health, greatly benefited by his sojourn in Natal. I have, with my family, lived in Durban a great many years, even when the town was but a wilderness of sand dunes. It now possesses well-hardened, well-paved, and well-lit streets, with a tramway running through its centre, and I may fairly ask if you can look on me as a fever-stricken individual. Hence I think Dr. Symes Thompson has rather generalised. The unhealthy portion of coast line really extends from St. Lucia Bay, in Zululand, to Delagoa Bay (Portuguese territory); but Durban is really looked upon as a sort of sanatorium, to judge from the number of fever-stricken patients that come down by sea from Delagoa Bay to take refuge in the Durban Hospital, thus adding to our death roll at times. Just a few words in conclusion with respect to that which is really the gateway to the Cape Peninsula, viz., Cape Town, because first impressions go a long way with travellers. I am at a loss to understand what the municipality of the oldest city in South Africa has been about for so many years. With the great advantages possessed by Cape Town, situated as it is on the slopes of Table Mountain, thus offering every natural facility for drainage, it is, in my opinion, a disgrace that such insanitary arrangements exist. As a fact, Cape Town has all the stinks of Cologne, besides several well-defined stinks of its own. I fully endorse Dr. Symes Thompson's remarks, and I make mine with some diffidence before my friend Sir Charles Mills, but the truth is necessary. With regard to what has been said with reference to the hotel accommodation I concur, and I am only astonished that the enterprise of the Cape merchants and others has not reached the length of combining to build a hotel on modern principles, suitable to the requirements and worthy of the city of Cape Town.